

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1 - 3 (Canceled)

4. (Currently Amended) An ~~The~~ infrared imaging apparatus of ~~claim 3~~ comprising:

a dewar, having an internal volume that defines a cold space;

an IR transmissive window that seals the cold space to receive IR

energy directly from an IR source;

a first lens located within the cold space to receive IR energy directly

from the IR transmissive window;

an IR detector located within the cold space in operational

communication with the first lens and positioned coincident to the focal plane of at

least a first and second wavelength of IR energy; and

an optical stop located within the cold space in front of the single lens,

wherein the single lens has a first aspheric profile on a first side and a second

aspheric profile on a second side, the first side parallel to the second side and the

second side facing the detector,

wherein the second aspheric profile has a holographic optical element, and

wherein the holographic optical element color corrects at least one two color

band ~~bands~~ of infrared energy.

5. (Original) The infrared imaging apparatus of claim 4, wherein the holographic optical element color corrects a red MWIR band and a blue MWIR band.

6. (Currently Amended) The infrared imaging apparatus of claim 4 4, wherein the detector is a hyperspectral detector.

7. (Currently Amended) The infrared imaging apparatus of claim 4 4, wherein the detector detects at least three wavelengths of IR energy including at least one LWIR band of energy.

8. (Currently Amended) The infrared imaging apparatus of claim 4 7, wherein the LWIR band of energy is preferably an indigo LWIR band.

9. (Currently Amended) The infrared imaging apparatus of claim 4 4, wherein the holographic optical element coincidentally focuses a MWIR band and a LWIR band of IR energy at a common focal plane.

10. (Currently Amended) The infrared imaging apparatus of claim 4 4, wherein the second wavelength of IR energy is a harmonic component of the first wavelength.

11. (Currently Amended) The infrared imaging apparatus of claim 4 4, wherein the single lens is made of germanium.

12. (Currently Amended) The infrared imaging apparatus of claim 4, wherein the single lens is made of silicon.

13. (Currently Amended) The infrared imaging apparatus of claim 4, wherein the apparatus performs at an F-stop (F/#) of at least 1.4 with a square field of view of 90x90 degrees.

14. (Currently Amended) The infrared imaging apparatus of claim 4, wherein the detector concurrently collects radiation from multiple, adjacent spectral radiation bands.

15. (Currently Amended) The infrared imaging apparatus of claim 3, wherein the first aspheric surface has the following prescription:

radius = -0.94467;

k = 28.345216;

a = -2.13952;

b = -69.5274;

c = 2342.04;

d = -56841.9; and

first surface thickness = 0.548467.

16. (Original) The infrared imaging apparatus of claim 15, wherein the second aspheric surface has the following prescription:

radius = -0.61281;

$k = 0.1399$;

$a = 0.033459$;

$b = -2.3598$;

$c = 10.889$;

$d = -36.331$; and

second surface thickness = 0.462731.

17. (Original) The infrared imaging apparatus of claim 16, wherein the holographic optical element has the following prescription:

-0.0051393, -0.10212, 0.91035, -2.3946.

18. (Currently Amended) The infrared imaging apparatus of claim ~~3~~ 4, wherein the first aspheric surface has the following prescription:

radius = -1.23508;

$k = 36.049455$;

$a = -1.69104$;

$b = -98.6413$;

$c = 5589.83$;

$d = -162359$; and

first surface thickness = 0.761661.

19. (Original) The infrared imaging apparatus of claim 18, wherein the second aspheric surface has the following prescription:

radius = -0.81270;

$k = -0.10748;$

$a = 0.054475;$

$b = -0.72423;$

$c = 2.9155;$

$d = -7.8939;$ and

second surface thickness = 0.480234.

20. (Original) The infrared imaging apparatus of claim 19, wherein the holographic optical element has the following prescription:

-0.017112, -0.038991, 0.55069, -1.6405.